

a. **SUMMARY INFORMATION PAGE**

i. **Project Title**

Solid Fuel Burning Appliance (SFBA) Conversion or Removal

ii. **Applicant Information**

State of Alaska

Department of Environmental Conservation

Division of Air Quality

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iii. **Total Project Cost**

a. Total Cost of Project.....\$5,000,000

b. EPA Funding Request.....\$5,000,000

c. Funding from Other Sources.....\$ 0

iv. **Project Period**

Anticipated dates: September 1, 2019 to August 31, 2024

v. **Short Project Description**

The economics of living in a subarctic climate plays a significant role in finding a solution to reaching attainment. To help permanently reduce particulate emissions, this projects seeks to continue the existing SFBA conversion or removal program and expand marketing and outreach efforts.

vi. **Place of Performance**

Fairbanks, AK Nonattainment Area

vii. **DUNS Number**

8093868570000

b. PROJECT SUMMARY & APPROACH

i. Detailed Project Summary

Fairbanks has the highest recorded 24-hour levels of fine particulate matter (PM_{2.5}) in the nation. Its 2015-2017 24-hour PM_{2.5} design value is 85 µg/m³, which is 240% above the 2006 24-hour National Ambient Air Quality Standard (NAAQS) of 35 µg/m³. No other community in the country has a greater fine particulate matter air quality problem. The challenge of identifying, funding, and committing to implement the controls needed to produce the reduction required to attain the ambient PM_{2.5} standard is huge.

Wood smoke is the main source of PM_{2.5}, contributing between 60% and 80% of pollution levels. Rules and regulations have resulted in incremental improvement in air quality for the Fairbanks North Star Borough (FNSB); however, large reductions are still required to meet the health based standards. Over the last few years, the Borough, in partnership with the Alaska Department of Environmental Conservation (DEC), has worked to reduce PM_{2.5} emissions through a combination of wood stove change out programs, regulatory restrictions, diversified public notification efforts, increased community engagement and outreach, and curtailment enforcement. Unfortunately, due to the magnitude of the problem, not enough progress has been made.

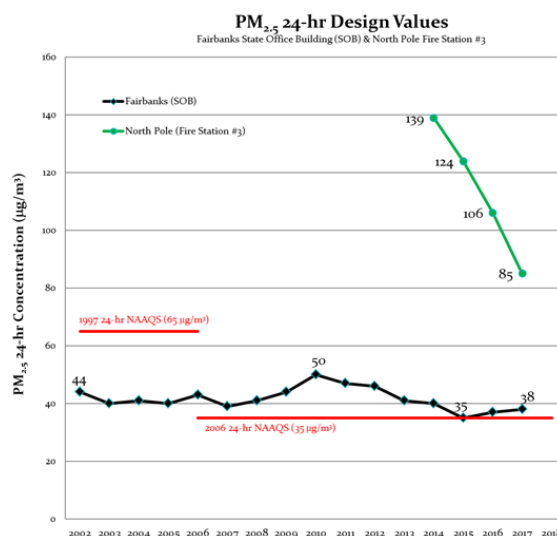
The economics of living in a subarctic climate plays a significant role in finding a solution to reaching attainment. Alaskans pay some of the highest energy costs in the United States. On average, Fairbanks residents pay \$8,100 annually on energy, 77% of which is for space heating. This application is seeking funding for two projects to provide a well-rounded approach for reducing PM_{2.5} emissions on a long term basis.

1. SFBA Conversion or Removal Program

As with the 2016 and 2017 EPA Targeted Air Shed (TAS) change out and conversion grant awards, DEC will partner with FNSB. FNSB manages multiple wood stove change out and conversion programs (WSCOP), which have varying eligibility requirements and funding sources, including previous EPA TAS grant funds. The local WSCOP operates independently of, but in compliment to, the TAS Grant programs. The 2016 TAS WSCOP allows for solid fuel burning appliance (SFBA) to SFBA change outs while the 2017 TAS Grant converts SFBAs used as a sole, primary, secondary, or emergency backup heating source to non-SFBAs.

Calculations based in inventory surveys estimate that approximately \$43 million is needed to convert or remove non-EPA certified wood stoves to EPA certified wood stoves or non-SFBAs in the FNSB Serious nonattainment area. As of July 2018, \$8.8 million has been expended to remove 330 SFBAs, convert 134 SFBAs to oil and gas, and change out 1,980 older, inefficient SFBAs to newer, cleaner SFBAs.

High energy costs and safety concerns (loss of power during winter sub-zero temperatures) result in high usage of SFBAs in the nonattainment area. This application seeks additional funding to further incentivize SFBA conversion to non-SFBA systems. Residents interested in converting to natural gas whose homes are located in the existing natural gas distribution area will be more positively weighted in the prioritization matrix. As with the 2017 TAS program, all approved applicants will be required to sign a deed restriction preventing future installation of SFBAs on participating properties. Gas fireplaces and other devices that are used exclusively for aesthetic or decorative use continue to be ineligible for conversion or removal under this program.



An estimated 447 SFBAs are expected to be converted or removed through this grant based on previous program statistics. Program participants in 2018 qualified for an average reimbursement of \$7,674 for conversions or removals. Due to the range of options and associated range of reimbursements listed in Table 1, the average reimbursement rate varies significantly based on the type of conversion or removal chosen. Financial incentives increase with corresponding increases in emission reductions in an effort to promote cleaner alternatives to SFBAs; therefore, while the average reimbursement rate may rise and the corresponding number of devices may fall, the environmental outcome of reduced emissions will still be realized.

Appliance conversion or removal calculations will account for emission reductions from lower PM_{2.5} emission factors as well as replacement appliance heating efficiency improvements (where applicable). Reductions from specific replacement options are generally consistent with the payout incentives shown in Table 1.

Table 1: Cost Breakdown Analysis

Table 1: Cost Breakdown Analysis		Cost Breakdown					Total Potential Cost of Replacement	Total Possible Reimbursement	Number of Devices	Total Reimbursement (total possible reimbursement x # of Devices)
Program & Device Type	Replacement Option	Device or Repair Component	Removal & Delivery of Old Device for Destruction	Installation (including delivery of new device & education on how to use new device)	Chimney/Stack	Hearth Pad, Fuel Tank, Utility Hookup				
Removal										
Hydronic Heater	x						\$ 5,000	\$ 5,000	15	\$ 75,000
Wood- or Coal-Stove	x						\$ 2,000	\$ 2,000	35	\$ 70,000
Replacement										
Hydronic Heater	Emergency Power System	\$ 5,000	\$ 750	\$ 2,500	\$ 1,500	\$ 500	\$ 10,250	\$ 10,000	6	\$ 60,000
Hydronic Heater	Home Heating Oil, Hot Water District Heat ¹	\$ 6,000	\$ 750	\$ 3,000	\$ 1,500	\$ 1,000	\$ 12,250	\$ 12,000	33	\$ 396,000
Hydronic Heater	Electric ¹ , Nat. Gas, Propane	\$ 6,000	\$ 750	\$ 4,000	\$ 1,500	\$ 2,000	\$ 14,250	\$ 14,000	10	\$ 140,000
Hydronic Heater	Home Heating Oil, Emergency Backup System, Hot Water District Heat, Electric ¹	\$ 4,000	\$ 100	\$ 2,500	\$ 1,000	\$ 2,000	\$ 9,600	\$ 6,000	164	\$ 984,000
Wood- or Coal-Stove	Nat. Gas, Propane	\$ 6,000	\$ 100	\$ 2,500	\$ 1,000	\$ 2,000	\$ 11,600	\$ 10,000	67	\$ 670,000
Hydronic Heater	Home Heating Oil, Emergency Backup System, Hot Water District Heat, Electric ¹	\$ 4,000	\$ 1,000	\$ 2,000	\$ 1,000	\$ 2,000	\$ 10,000	\$ 6,000	32	\$ 192,000
Fireplace	Nat. Gas, Propane	\$ 6,000	\$ 1,000	\$ 3,500	\$ 1,500	\$ 2,000	\$ 14,000	\$ 10,000	85	\$ 850,000
Totals									447	\$ 3,437,000
Footnotes:										
1 The option for replacing with electric or hot water district heat would not include all elements in the cost breakdown, and historically these options have not been used										
NOTE: The above figures are estimates based on historical trends/costs associated with the currently operating change out program. This reflects the increased prices for heating appliances and parts due to high shipping costs to Alaska. The above scenario uses full payouts for each program, which explains the discrepancy between the actual										

2. Marketing & Outreach

With a contentious issue that pits heating one's home versus breathing clean air, community buy-in is a necessary component to successfully implement a comprehensive plan that brings the area into attainment. A key aspect of community buy-in is how the public perceives health impacts, ambient monitoring data, the planning process, control measures, economics, the science behind these components, and the government agencies involved.

Over the past 9 years, traditional education methods have been employed to convey factual information on air quality issues. While these efforts have proven beneficial, the current public perception of the local air quality department remains low. This point is illustrated by the recent passage of a local ballot proposition, which prohibits the FNSB from regulating home heating; therefore new and innovative ways to reach the public are required.

Recently, the community was engaged in an Air Quality Stakeholders Group, which is explained under “Section C: Community Benefits, Engagement, and Partnerships.” The Stakeholders process indicated deficiencies in education and outreach with their final package including 11 recommendations in that area. Two of the specific recommendations include developing a public relations strategy and employing behavioral economics.

A public relations strategy, including a communication process that builds mutually beneficial relationships between organizations and the public, needs to be developed. The strategy should incorporate the concepts of community engagement and relationship building. FNSB will partner or contract with an outside organization to develop a public relations strategy.

Message content is critically important for public education and compliance through changed behaviors; therefore, an aspect of this project is to work with behavioral economists to review and revise current messaging. Behavioral economics is a method of economic analysis that applies psychological insight into human behavior to explain economic decision making.

The Center for Advanced Hindsight at Duke University researches human behavior and decision-making and has advised FNSB informally for approximately one year. Their collaboration has helped identify key behaviors among residents that will most influence air quality as well as barriers to achieving those behaviors. A workshop in 2017 led to the development of several test concepts to change the key behavior, but detailed test design, implementation, and measurement will require further funding. FNSB will partner or contract with an outside organization to continue the behavioral economic work.

FNSB will also use grant funding to market this conversion and removal program in addition to the existing change out, conversion, and removal programs.

ii. *Ongoing, Significant Reduction of Emissions*

1. SFBA Conversion or Removal Program

Appliance conversion or removal programs produce lasting emission reductions by reducing the number of high polluting devices in an area. As with the 2017 TAS program, all approved applicants will be required to sign a deed restriction preventing future installation of SFBA on participating properties.

In determining whether to fund a conventional change out program or a SFBA conversion program, data from existing WSCOPs has been analyzed for emission reductions. Table 2 compares emission reductions for SFBA to SFBA or “wood to wood” change outs and SFBA to oil or gas conversions. In the “Replacement Type” column of Table 2, SFBA represents a wood to wood change out and the Gas/Oil type represents a conversion to a cleaner fuel. Table 2 shows that emission reductions are greater for converting a SFBA to oil or gas on a device basis. While more expensive, the emission reductions required to bring the area into attainment warrant a conversion and removal program. It’s important to note that emission reductions based on wood stove emission factors may not be reliable as preliminary cordwood testing results show that EPA approved stoves may have difficulty meeting their emission guarantees. Therefore, the wood to wood emission reductions may not be fully realized, which supports the decision to go to a conversion program.

Table 2: WSCOP Emission Reduction Breakouts for Replacements by Replacement Type (2013-2018) (Including Device Efficiency Benefit

Replace Type	Parameter	2013	2014	2015	2016	2017	2018	All
SFBA	# of Devices	213	466	409	87	65	28	1268
SFBA	PM2.5 Before (tons/winter day)	0.063	0.171	0.142	0.029	0.021	0.013	0.439
SFBA	PM2.5 After (tons/winter day)	0.024	0.043	0.035	0.007	0.005	0.002	0.116
SFBA	PM2.5 Net Red'n (tons/winter day)	0.039	0.129	0.106	0.022	0.016	0.011	0.323
Gas/Oil	# of Devices	5	22	26	20	19	42	134
Gas/Oil	PM2.5 Before (tons/winter day)	0.002	0.007	0.009	0.006	0.010	0.031	0.066
Gas/Oil	PM2.5 After (tons/winter day)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gas/Oil	PM2.5 Net Red'n (tons/winter day)	0.002	0.007	0.009	0.006	0.010	0.031	0.065

As of mid-2018, 1,980 SFBA to SFBA change outs have been completed through the WSCOPs; however, due to the high design value, SFBA to SFBA change outs are not sufficient to bring the area into attainment. While always an option under existing change out programs, only 464 SFBA's have been removed or converted through existing WSCOPs, leaving an estimated 12,000 SFBA's eligible for conversion or removal. Comparatively, approximately 3,400 non-EPA certified SFBA's would benefit from a WSCOP. The increased number of eligible devices and guaranteed permanent and ongoing emission reductions coupled with the high design value justify the higher annual cost of the conversion program.

Despite the fact that only 464 SFBA's have been converted or removed, recent data shows that, with the proper incentives, the projected number of conversions or removals can be achieved. Due to tight prioritization, many current applicants are only eligible for a conversion or removal. Quarterly reports for the 2016 TAS Grant WSCOP shows that the program is on track to meet projected removals and conversions. Additionally, date certain removals of SFBA's were recommended by the AQ Stakeholders and are included as a control measure requiring assessment for the FNSB nonattainment area. This additional control measure combined with an expanded marketing campaign ensures the projected target of 447 conversions or removals over a 5 year period can be achieved.

SFBA's may be removed and not replaced, or converted to a variety of low emitting appliances, such as those powered by home heating oil, natural gas, propane, electricity, or district hot water (where available). Emergency power backup systems to replace SFBA's that may be maintained for emergency situations, such as power outages, are also eligible under this project, as are natural gas connections. All solid fuel (wood and coal) hydronic heaters, stoves, and fireplaces will be eligible for one of six replacement options: home heating/oil heater, hot water district heat, electric heater, natural gas device, propane device, and backup emergency power systems.

Removed SFBA's are destroyed to prevent further operation by requiring that all appliances be brought to the FNSB Air Quality Division office, or other FNSB authorized location, for destruction. A Certificate of Destruction is issued to the appliance owner by the FNSB. SFBA's are destroyed to ensure that devices cannot be placed back into operation, which results in a net reduction of emissions. Upon WSCOP application approval, property owners must sign a deed restriction to prevent any future installations of SFBA's on participating properties. All conversions and removals of SFBA's under this program will require a deed restriction.

The project goal is the permanent removal of SFBA's from the nonattainment area. Permanent removal of these appliances, backed by property deed restrictions, will result in long term PM_{2.5} emission reductions in the nonattainment area.

2. Marketing and Outreach

A key factor with many of the residential wood control measures is the compliance rate, or lack thereof. One method to increase the compliance rate, other than enforcement actions, is through increased marketing, public relations, education, and outreach. The marketing and outreach will seek to achieve ongoing significant emission reductions through marketing the WSCOPs, a public relations effort incorporating community engagement, and incorporating behavioral economics to increase the compliance rate with residential wood control measures. In short, increase voluntary compliance with control measures aimed at reducing emissions.

iii. Analysis of Emissions Inventory

1. SFBA Conversion or Removal Program

Emission inventories for the nonattainment area have been compiled for the moderate SIP and are being updated for the serious SIP. An emission inventory analysis was prepared in October 2018 for the Air Quality Stakeholders Group, a community based group formed to provide recommendations on control measures, in order to evaluate the effectiveness of their recommended control measures. Table 3 shows a composite 2019/2024 emission inventory by source category for particulate matter and precursor pollutants. In the composite inventory, the home heating source sector has been projected to 2024 while the other source sectors represent the 2019 inventory.

Table 35: Composite 2019/2024 Baseline Winter Season Nonattainment Area Emissions (tons/day) by Source Sector

Source Sector	Nonattainment Area Winter Season Emissions (tons/day)				
	PM _{2.5}	NO _x	NH ₃	SO _x	VOC
Point Sources	0.83	10.63	0.02	7.13	0.09
Home Heating	2.93	2.74	0.15	4.17	10.37
Other Area	0.20	0.25	0.05	0.02	2.35
On-Road Vehicles	0.14	2.14	0.05	0.04	3.25
Nonroad (with rail)	0.01	0.37	0.00	0.01	0.11
Airport	0.27	0.88	0.00	11.32	0.57
TOTALS	4.39	17.00	0.27	22.68	16.73

An analysis of the emission inventory shows, for direct PM_{2.5} emissions, the largest contributing sector is home heating. The 2013 baseline emission inventory showed that, within the home heating sector, wood space heating accounted for approximately 94% of the space heating PM_{2.5} emissions. Further analysis has been conducted by DEC with speciation and source apportionment along with dispersion modeling. Figures 1-3 show the results of all source contribution approaches. These results show that the home heating sector, residential SFBAs in particular, represent the largest individual contribution to PM_{2.5} pollution.

Figure 1: Nonattainment Area PM_{2.5} Emission Inventory (tons/day)

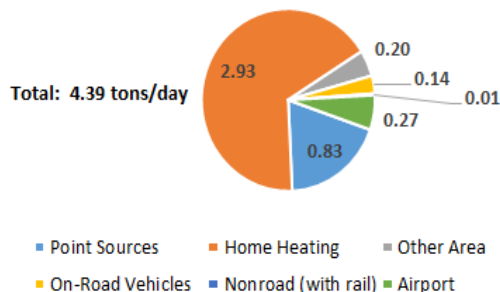


Figure 2: Air Quality Modeling
2013 State Office Building Contributions

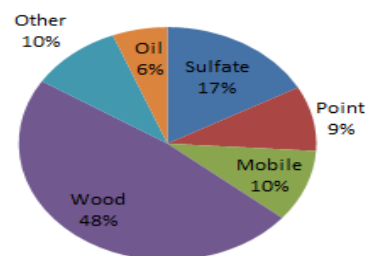
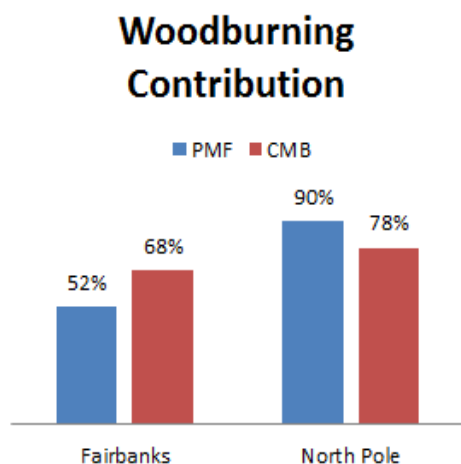


Figure 3: Speciation & Source Apportionment



FNSB has operated a WSCOP since 2010, spending approximately \$8.8 million through July 2018. Emission reductions through July 2018 are approximately 0.43 tons/day of PM_{2.5} emissions, and are already factored into the 2.93 tons/day for the projected 2024 emission inventory. The 0.43 tons/day accounts for overlap with other control measures. The projected 447 conversions will result in an additional 0.22 tons/day of emission reductions.

Emission reduction calculations will use data from participant surveys, EPA certification data, AP-42, and other data sources as needed to calculate emissions from the eligible device before conversion or removal. Emissions from new or existing non-SFBAs will be calculated using data from the same sources and subtracted from the initial emissions to determine the net emissions reduction. This will be calculated for each participant on an annual and lifetime basis.

2. Marketing and Outreach

While difficult to quantitatively address the importance of marketing and outreach, qualitatively the lack of community buy-in has contributed to Borough voters approving multiple voter propositions prohibiting the FNSB from regulating area sources such as home heating, which has delayed progress toward attainment. Additionally, the low public perception of the regulatory agencies does not lend to confidence in the control measures adopted to bring the area into attainment.

iv. Strategy for Achieving Greatest Emission Reductions

WSCOP applications are evaluated through a prioritization matrix, which is based on three parameters: zone, emission reductions, and burn frequency. Focusing on these parameters will maximize the air quality benefit of the project. Completed applications must include a location, what SFBAs will be converted or removed, and what program (sole, primary, secondary, or emergency backup source of heat) the applicant wishes to participate in. FNSB will process the application, including taking any initial pre-verification pictures, to determine applicant eligibility. Each application is given a numerical score based on the three parameters and must meet a minimum score to meet program eligibility. To ensure SFBA conversions are properly sized to meet space heating needs efficiently and are correctly installed, approved applicants are required to use a FNSB-listed installer.¹ Approved applicants will be provided a list of FNSB-listed installers and reminded of the deed restriction requirement in order to be eligible for financial reimbursement.²

Zone

Zone prioritization targets areas within the nonattainment area that need the most emission reductions. Eligible structures or appliances must be located inside a portion of the nonattainment area known as the Air Quality Control Zone (AQCZ). The AQCZ is broken down into four zones ranging from best to worst air quality, which includes the population centers of Fairbanks and North Pole where monitors have recorded frequent PM_{2.5}

¹ To be a FNSB-listed installer, a person is required to agree to the terms set forth by the FNSB and provide proof that they have the proper certification(s) to install the types of appliances they are approved for. This is available to any interested installer who is able to fulfill all requirements.

² If an approved applicant is unable to front the initial cost of the allowable reimbursement expenses, the FNSB offers an optional Vendor Direct program, where the FNSB reimburses the installer directly for the appliance and labor up to the allotted amount. The applicant is responsible for payment to the installer for any amount over the total reimbursable amount. The applicant and installer will sign and submit a Vendor Direct Payment Agreement to the FNSB, indicating that both parties agree to work together. In order to be reimbursed by the Borough, an installer is required to submit final installation pictures and any other required documentation or certifications to ensure that devices were properly installed.

pollution episodes. Zone designation is based on data that was gathered through FNSB's hot spot guidance program, which used vehicle-mounted low cost pDR monitors to gather data throughout the AQZ from October through March on a daily basis. The hot spot guidance program collected this data from 2008 through 2018. The pDR monitors are continuous nephelometers used to measure ambient levels of PM_{2.5} emissions and, while not regulatory quality, produce reliable data.

Emission Reductions

Emission reductions are based on SFBAs being removed and the replacement appliance, if applicable. The highest priority is the removal of SFBAs from the nonattainment area. SFBAs may be removed and not replaced, or converted to a variety of low emitting appliances, such as those powered by natural gas.

Burn Frequency

Burn frequency is reported by the applicants during the application process.

v. Support of EPA's Strategic Plan

Goal 1 Core Mission Objective 1.1 of EPA's Strategic Plan is to improve air quality, with strategic measure SM-1 being the reduction in the number of nonattainment areas in the United States. The strategy directs EPA to work with states and local governments to design and implement air quality standards and programs.

This proposal is a partnership between EPA, DEC, and FNSB to work towards reducing PM_{2.5} emissions through the removal and conversion of SFBAs. Additionally, by providing financial incentives to convert SFBAs to natural gas devices, it supports the efforts of the Interior Gas Utility (IGU) to provide natural gas to Fairbanks and North Pole. SFBA removals and natural gas conversions are identified as some of the most effective strategies to bring Fairbanks into PM_{2.5} attainment on a long-term, permanent basis.

c. COMMUNITY BENEFITS, ENGAGEMENT, AND PARTNERSHIPS

Community Benefits

The general public experiences reduced emissions as SFBAs are removed from the nonattainment area. The program results in net emission reductions due to cleaner appliance use, the destruction of removed appliances, and deed restrictions preventing future installations of SFBAs on properties participating in the program. Reduced air pollution positively impacts public health and health outcomes in the population's most sensitive groups, such as children, the elderly, and those with preexisting medical conditions that affect the respiratory and cardiovascular systems.

Community Engagement and Partnerships

In response to DEC's request for community based solutions to reach attainment, the Fairbanks Economic Development Corporation, the Greater Fairbanks Chamber of Commerce, the Downtown Association of Fairbanks, the North Pole Community Chamber of Commerce, Explore Fairbanks, the Cities of Fairbanks and North Pole, and the FNSB partnered to form the Air Quality Stakeholders Group (AQ Stakeholders Group). The AQ Stakeholders Group comprised of over 60 volunteer citizens that represent the community, military, point sources, solid fuel suppliers, industry, and non-governmental organizations (NGOs) as either primary or proxy stakeholders. Each Stakeholder contributed approximately 80 hours over 6 months considering ways to improve local air quality, culminating in a final package of recommendations that were submitted to DEC and FNSB. The package included measures that support increased natural gas distribution, continued WSCOPs, and expanded education and outreach opportunities. Also included was the recommendation for date certain removal of SFBAs. The full list of recommendations is provided as an attachment to FEDC's partner support letter in "i. Attachment, iii. Letters of Support."

Other citizen-based groups have formed and presented ideas for consideration; specifically, those of the Wood Burning community and the Citizens for Clean Air. While these groups are not always formally organized, they are becoming increasingly engaged on the issues regarding meeting attainment as stricter regulations and requirements are imposed. These groups may have competing interests in their reasons for mobilizing efforts; however, they are beginning to work collaboratively in some aspects while they have historically been at extreme odds. Additionally, some members of the AQ Stakeholders Group are interested in pursuing an EPA Environmental Justice grant to continue working on community based solutions. FNSB and DEC intend to continue working with these groups and hope to increase their engagement on finding solutions through the development of a cooperative, community-based strategic plan to bring the area into attainment.

d. PROJECT SUSTAINABILITY

Long-term and permanent emission reductions are achieved in this project through deed restrictions and device destructions. Once the project is complete, no additional effort is required to maintain the emission reductions realized; however, this project funding will not be sufficient to convert or remove all eligible SFBAs in the nonattainment area. DEC and FNSB will continue to partner and seek additional funding sources to work towards attainment.

e. ENVIRONMENTAL RESULTS – OUTCOMES, OUTPUTS, & PERFORMANCE MEASURES

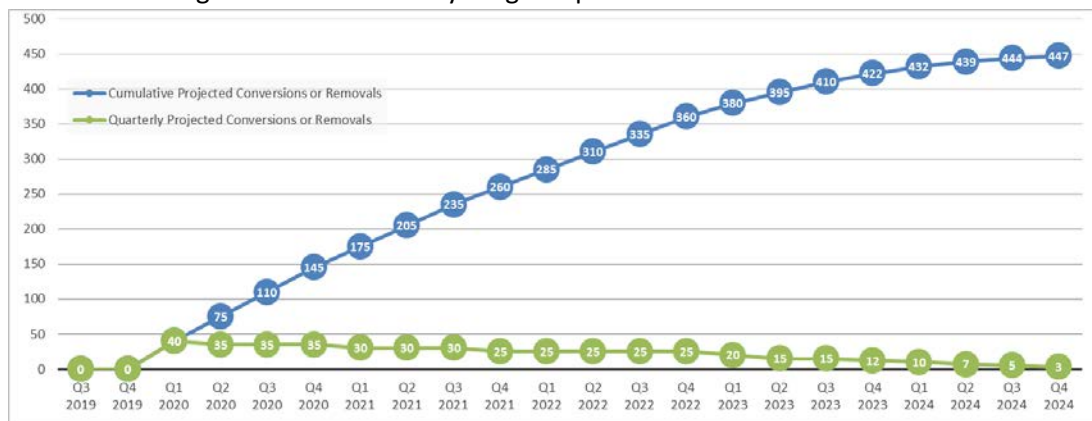
Expected Project Outputs & Outcomes

ANTICIPATED OUTPUTS & OUTCOMES	
Outputs	Outcomes
Replace 447 solid fuel burning appliances with non-solid fuel alternatives	<ul style="list-style-type: none"> Short term – 0.22 tons PM_{2.5} reduced per winter day Long term – lifetime emission reductions of 0.22 tons PM_{2.5} per winter day The voluntary wood stove change out and conversion program has qualified PM_{2.5} emission reductions that will be included in the SIP as a control measure to meet BACM requirements
Marketing & Outreach	<ul style="list-style-type: none"> Increased public awareness of project and results Increased public participation in programs as a result of improved marketing and outreach efforts Community engagement and partnership

Performance Measures

FNSB will report on the number of conversions or removals completed, replacement option of each conversion, maximum reimbursement amount, the actual cost of completed conversions or removals, types of SFBAs removed, and types of converted appliances (if applicable). Using the SFBA type removed and the conversion option, PM_{2.5} emission reductions and cost per ton of PM_{2.5} emissions reduced will be estimated.

Projected number of change outs over the five year grant period:



Performance Plan

SFBAs converted or removed will be tracked and reported as required. It is difficult to predict the types and amounts of SFBA conversions or removals and when they will occur during the grant period. The program is voluntary and the number of appliances being converted or removed in any one quarter is unpredictable; however, participation is most likely to occur during summer months. The projections are an estimate of future performance based on historical information and are not considered a goal or benchmark to be judged on a quarterly basis as the projections do not take into account issues such as seasonal variability. The projected versus actual should be viewed as a qualitative check to ensure the program is progressing along the correct path, not to quantitatively compare the two values.

In order to estimate appliance-specific emission benefits, the emissions rating of the SFBA to be converted or removed will be logged and compared to the emission rating of the replacement appliance (or zeroed out if removed). Appliance-specific benefits from conversions will be calculated using test results and assumptions consistent with SIP inventory control measure benefit methods for the on-going WSCOPs. For uncertified devices, FNSB will use AP-42 emission factors for uncertified SFBAs to estimate emissions of the device being removed.

As part of the WSCOP application process, applicants are requested to provide information regarding the device age, cord usage, and whether the device is a primary, secondary, or sole source of heat; however, due to the nature of the information coming from the applicant, the information is not wholly reliable.

Data collected will be submitted and reported as required. This information may include the number of appliances removed, the number of appliances converted, and the number and types of appliances installed as a result of conversion. This data will be used to determine emissions benefit calculations, which will provide an overall calculation of PM_{2.5} emissions removed from the nonattainment area.

Time Schedule & Tasks

See "Attachment v: Project Timeline."

f. PROGRAMMATIC CAPABILITY AND PAST PERFORMANCE

Management, Completion, & Reporting Requirements

DEC is responsible for grant oversight and fulfilling grant reporting requirements, including quarterly reports and the final report. DEC will manage the grant in accordance with the Uniform Grant Guidelines. The DEC Division of Air Quality will monitor all work conducted under this award and be responsible for all reporting requirements to the EPA. The Division has demonstrated programmatic and financial capability, successful implementation, and timely reporting through the historical and ongoing successful management of the State of Alaska's other air quality specific EPA grants:

- CFDA 66.605 – Performance Partnership Grants
 - Clean Air Act 105 grant; Radon; Pesticides; & Multipurpose Activities related to Air Quality
- CFDA 66.034 – Surveys, Studies, Investigations, Demonstrations & Special Purpose Activities relating to the Clean Air Act
- CFDA 66.040 – State Clean Diesel Grant Program
- CFDA 66.708 – Pollution Prevention Incentives States

DEC is the eligible applicant and will partner with Department of Commerce, Community, and Economic Development (DCCED) and FNSB to complete the proposed project. If the FNSB is unable to partner in this program, DEC will administer the SFBA conversion or removal program independently.

Both DEC and DCCED have a long history of partnering with FNSB to implement both federal and state funded programs. In order to successfully achieve the objectives outlined in this work plan, DEC will establish a Reimbursable Service Agreement (RSA) with DCCED to sub-grant funds to FNSB. DCCED will conduct on-site inspections of work conducted by FNSB and conduct thorough reviews of all invoiced activity prior to payment. DCCED will meet with DEC and/or FNSB monthly, but no less than quarterly, to confirm successful progress toward objectives. Because DCCED currently manages sub-awards to FNSB from other funding sources, they have a positive relationship with FNSB staff. Additionally, DEC has had a number of other partnerships directly with FNSB and is an occasional participant in FNSB Assembly and Air Pollution Control Commission meetings. Because of these long-established relationships, DEC, DCCED, and FNSB are confident that these funds can be expended in a timely and efficient manner to meet the objectives in this work plan.

DEC is responsible for grant oversight, fulfilling grant reporting requirements, including quarterly reports and the final report, and will manage the grant in accordance with the Uniform Grant Guidelines. FNSB will administer the SFBA Conversion or Removal program, the Marketing & Outreach programs, document program operations, estimate emission benefits, and document procedures developed in the project. FNSB will provide DCCED with quarterly reports that include progress on each of the project steps, funds expended, data collected, and project performance. DCCED will review quarterly reports to ensure grant reporting requirements have been fulfilled. DCCED will submit reports to DEC. DEC will review all reports and submit to EPA.

Organizational Experience and Plan

The FNSB Air Quality Division has successfully administered a local WSCOP in the nonattainment area since 2010 and has adapted the program as needed to meet program requirements. Additionally, the FNSB is administering the 2016 and 2017 TAS WSCOPs. Current program requirements are codified in FNSB Code, Chapter 21.28 "PM_{2.5} Air Quality Control Program." Additional information is available on the FNSB website (AQFairbanks.com).

As of July 2018, \$8.8 million has been expended to remove 330 SFBA's, convert 134 SFBA's to oil and gas, and change out 1,980 older, inefficient SFBA's to newer, cleaner SFBA's. In the area's Moderate SIP, DEC estimates PM_{2.5} emission reductions in 2015 are 0.394 tons per day. The design of the WSCOPs has evolved over time, typically consisting of both increasing financial incentives and expanding the categories of eligible SFBA's.

If operating the program independently, DEC will contract with experienced local businesses through a competitive process to provide services, including selection, installation, and disposal. DEC will develop the identified work products and administer the program. DEC has experience managing contractors and implementing programs to improve local air quality.

Staff Expertise

Cindy Heil is the DEC Air Quality Non-Point Mobile Sources, and has been with the department since 1990. In her current role, she oversees all the air quality projects for air quality standards and health benefits of the local communities, tribes, industries, other government agencies, environmental groups, and individuals living within the State of Alaska. These projects include both PM_{2.5} and PM₁₀, Regional Haze, air toxics, carbon monoxide, indoor air, ultra-low sulfur diesel, and conformity (general and transportation). Cindy has specifically been responsible for developing the Alaska State Implementation Plans for PM_{2.5}, PM₁₀, CO, and Regional Haze. She has been working tirelessly for the past decade on assisting the FNSB nonattainment area attain the PM_{2.5} NAAQS.

Adeyemi Alimi is an Environmental Program Specialist in the ANPMS Group of the DEC Air Quality Division and has been with DEC for about 6 months. He is one of the Division's contact persons for conformity, CO, PM_{2.5}, ULSD, and vehicle emissions. Prior to joining the state, Adeyemi worked as a chemist/laboratory analyst in White

Environmental Consultants Inc. Anchorage, AK, where he was responsible for writing the SOPs, and the analysis of lead in air, soil, dust wipes, and paint as well as the determination of asbestos in industrial workplace. He is currently assisting with the FNSB nonattainment area Serious SIP development.

Joey K. Ausel is the DEC Air Quality Administrative Operations Manager and Radon Program Manager and has worked for DEC since 2008. In her current role, she is responsible for oversight and management of the Division of Air Quality's \$10 Million budget and ensuring Division compliance with federal, state, and local administrative and financial requirements for a wide variety of funding sources. Prior to her current role in the Department, Joey worked as the Department's Budget Manager responsible for the strategic planning of the Department's \$80 Million operating budget and \$100 Million capital budget. Additionally, she served as the Senior Grants Administrative for the Denali Commission managing the financial assistance agreements for their \$130 Million annual federal budget. Joey holds a Bachelors in Accounting and a Master's in Business Administration and has completed courses in the Uniform Administrative Guidance.

Nick Czarnecki is the FNSB Air Quality Division Manager. In his current position, he supervises FNSB Air Quality Division employees, develops and executes the annual operating budget for the division, prepares and submits quarterly and annual budget and grant reports, and manages day-to-day operations of the Division. Additionally, Nick is responsible for managing the 2016 and 2017 TAS change out and conversion and removal programs in partnership with DEC. Nick has 16 years of air quality experience and 7 years of project management experience. Prior to his position with the FNSB, he led the air quality group at Lowham Walsh LLC (consulting firm) managing multiple projects spanning major and minor source permitting, compliance assistance, emission inventory preparation, and ambient monitoring. At Lowham Walsh, Nick was a member of the Board of Managers, which is responsible for compiling quarterly projections, budget review, and workload/staffing decisions. Nick also worked for the Wyoming Department of Environmental Quality, Air Quality Division in compliance and enforcement for 9 years where he was responsible for inspecting a wide variety of industrial emission sources to ensure compliance with state and federal air quality regulations.

g. BUDGET

i. Budget Description

The below described budget represents the budget for the full project. The term of the project is expected to take a period of 5 years. Note: As a contingency, if FNSB is unable to implement the program as described, DEC will operate the program independently and use the same budgetary framework except that DEC would use the DCCED portion of the budget to implement the program independently.

Budget Category	EPA Allocation	State or Territory Match	State Cost Share	Total
1. Personnel	\$55,402	0	0	\$55,402
2. Fringe Benefits	\$32,759	0	0	\$32,759
3. Travel	\$1,130	0	0	\$1,130
4. Supplies	0	0	0	0
5. Equipment	0	0	0	0
6. Contractual	0	0	0	0
7. Program Income	0	0	0	0
8. Other	\$4,889,929	0	0	\$4,889,929
9. Total Direct Charges	\$4,979,220	\$0	\$0	\$4,979,220
10. Indirect Charges	\$20,780	0	0	\$20,780

Grand Total	\$5,000,000	\$0	\$0	\$5,000,000
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ii. Approach, Procedures, & Controls

After project award, DEC will establish a RSA with DCCED, the state's experts in grants to communities, who will sub-grant funds to the FNSB. Program operations will begin upon the acceptance of the sub-grant award funds by the FNSB Assembly and continue through the end of the project period or as funds allow. DEC and DCCED will check-in regularly with FNSB on outcomes and performance measures as identified in the grant application and the final work plan. Quarterly reports will be submitted by DEC during design and construction with annual reports being submitted after construction for the remainder of the grant period. A technical final report will be submitted at the close of the grant period.

iii. Itemized Costs

Personnel

DEC personnel costs cover the staff time needed to manage the grant, which is estimated at 216 hours annually or 0.72 FTE for the five year life of the grant. DEC staff is responsible for providing programmatic review of DCCED reports; regular meetings/check-ins with DCCED & FNSB on outcomes and measures; management of the interagency agreements and reimbursement agreements between DEC and DCCED; preparing and submitting regular reports to the EPA; and preparing and submitting the final report to the EPA at the conclusion of the project.

Position Title	Total Estimated FY20 Base Salary	Total Per Year FTE	# Years needed	Total	
				Total 5 year award Estimated FTE	Total Estimated 5 year Base Salary
Env Program Spec III - Non Point	\$ 59,971	0.11	5	0.56	\$ 33,584
Env Program Mgr II - Non Point	\$ 145,889	0.02	5	0.12	\$ 17,507
Admin Ops Mgr I	\$ 107,784	0.01	5	0.04	\$ 4,311
Base Salary					\$ 55,402

Fringe Benefits

Benefits include: Leave cash-in, risk management, unemployment insurance, terminal leave, retirement benefit, health insurance, life insurance, legal trust fund, SBS (Supplemental Benefit System), and Medicare. These rates vary by position type. Below is an estimation of those rates.

Fringe Benefits					
Benefits include: Leave cash-in, risk management, unemployment insurance, terminal leave, retirement benefit, health insurance, life insurance, legal trust fund, SBS (Supplemental Benefit System), Medicare					
FY19 Fringe Rate @	59.13%				\$ 32,759
Total Fringe					\$ 32,759

Travel

DEC will set-aside funding for one trip from Anchorage to Fairbanks to provide technical assistance on this project. Programmatic/management staff regularly travel to Fairbanks out of the Division's existing budget and will conduct in-person reviews with FNSB & DCCED during those planned trips. This budget ensures the Division can make a grant-specific trip if needed.

Estimated Travel (Based on past history)			
Estimated Rates			
Airfare: Avg Anch/Fbx	\$	600	
Hotel/Meals/ Transportation (per day)	\$	265	
			Total
In-State Travel		# of Trips	# of Nights
Technical Assistance		1	2
(1 trip from Fairbanks to Anchorage)			
Total Travel			\$ 1,130

Contractual Costs

DEC will issue a Reimbursable Service Agreement (RSA) to DCCED, which is reflected in the budget under "Other costs".

Equipment

DEC is not planning any direct equipment purchases from this award. All equipment will be purchased through the agreement with DCCED and FNSB, annotated in the "Other" section below.

Other

The RSA between DEC and DCCED covers DCCED's personnel and fringe costs, travel, and supplies associated with the administration of the FNSB sub-award. This administrative route is necessary as DEC does not have legislative authority to issue sub-awards; therefore, funds and sub-award management responsibilities must be transferred to the state experts in sub granting: DCCED. These expenses will be reported through the contractual line, as that is the location such agreements are recorded in the State's accounting system.

Below is a budget breakout and description of funds provided by the grant to DCCED and sub-awarded to FNSB.

Reimbursable Service Agreement to State of Alaska Department of Commerce, Community & Economic Development (DCCED) to manage Sub-			
DCCED PS & Fringe (1,725 hours for 5 year grant)			
	(Includes administrative staffing spread among 5 staff)	\$	108,533
Travel			
	(Includes travel for on-site inspections)	\$	2,700
Contractual			
	(Administrative allocation for department-wide services)	\$	3,267
Supplies			
	(General office supplies)	\$	500
Indirect	(DCCED will not charge indirect on this RSA)	\$	-
Total DCCED Expenditures			\$ 115,000

Contractual costs reflect the administrative allocation for department-wide services. DCCED personnel costs include a total of 1,725 hours for the five year life of the grant. Personnel hours are spread among five staff

positions who will be responsible for the FNSB sub-grant oversight, issue resolution, administration, and progress and financial reports submitted to DEC. DCCED staff will conduct and participate in on-site monitoring, fiscal compliance meetings, and sub-award closeout responsibilities and tasks. DCCED anticipates a small budget for general supplies associated with managing this sub-award. Fairbanks will contribute staff time and resources to develop work products and administer the project as needed.

Sub-Award from DCCED to Fairbanks North Star Borough (FNSB)				
<u>FNSB PS & Fringe</u>	(none)		\$	-
<u>Travel</u>	(none)		\$	-
<u>Contractual</u>				
	SFBA Conversions & Removals		\$	3,437,514
	Marketing & Outreach		\$	903,331
<u>Supplies</u>	(none)		\$	-
<u>Indirect</u>			\$	434,084
Total DCCED Expenditures			\$	4,774,929

The total RSA amount to DCCED will include the DCCED portion of funds as well as the sub-award amount, thus the total RSA reflected in the Other section of the budget is \$4,889,929.

Total Other			\$	4,889,929
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Program Income

The project being conducted under this grant will not generate income. No material income will be derived by any party due to scrappage. There is no current market available to Alaska recyclers for cost-effective recycling of the scrap metal. The components from the old appliance will not be sold for parts or re-use.

Direct Charges

Total direct charges for the project are \$4,979,220. This project will be funded by EPA federal funding with zero cost share or match provided by the State of Alaska or partner agencies.

Indirect Costs

Indirect charges are calculated on DEC's total personnel and fringe costs at the federally negotiated SFY 19 rate of 23.57%.

iv. Voluntary Cost Share/Match

This proposal is for a 100% EPA funded project, with no state cost share or match. The RFA states that a cost-share or match is not required for this application. The State of Alaska does not intend to contribute cost share or match. FNSB will contribute staff time and resources needed for the administration of this project.

h. LEVERAGING

No Cost Share or Match is proposed as part of this project application.

i. ATTACHMENTS

- i. *Biographical Sketch*
- ii. *Quality Assurance Narrative Statement*
- iii. *Letters of Support*
- iv. *Emissions Calculations*
- v. *Project Timeline*